

Dynamic Management
of the
European Airspace Network

ADR
Data Catalogue

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Document Control

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1. Introduction

1.1 Objective

The objective of this document and its supporting annexes is to identify the data items needed to meet the Airspace Data Repository (ADR) operational requirements (see reference 1) together with the following information:

- mapping of data items to the services which the ADR will support (see Annex A).
- geographical area of coverage of all the ADR objects and attributes (in this document).
- data flows between the ADR system Components (see Annex B)
- requirements for ADR Data Provision (see Annex C)
- source of each data item such as tools, systems, etc (see Annex B)
- owner of each data item (see Annex C)
- how data items will be validated for accuracy, etc. (see Annex C)
- level of quality required for each data item (see Annex C)
- confidentiality of each data item (see Annex C)
- at which data management phase the data item needed (in this document)
- AIXM definition of each data item (see Annex D)

1.2 Scope

The scope of the ADR Data Catalogue covers the complete ADR, namely ADR Phase I and ADR Phase II.

For more information regarding the content and deployment schedule for the ADR phases see the ADR Project Charter (reference 2).

1.3 How The Document Will Be Used

This document, together with its supporting annexes will be used by:

- The project team responsible for establishing the requirements and the processes to manage the data required for ADR services
- The users & providers of ADR services to understand their roles and responsibilities for providing and using the data.
- Operational users and developers as a communications tool to confirm a common understanding of the data requirements.
- ADR Developers (database designers, ICD authors, etc.) to ensure the ADR satisfies the operational requirements efficiently, in particular the B2C and B2B interfaces.
- Analysts to support determining the impact of a change request on business processes.

1.4 Context

The Airspace Data Repository (ADR) is the main systems enabler of the DMEAN Framework Programme for implementing a dynamically managed European airspace network, see DMEAN Concept of Operations (reference 3).

The purpose of the ADR is to provide a virtual and consolidated view of European airspace data, which is kept up to date in real time throughout the day of operation. In particular, the ADR will provide a unified source of up-to-date and accurate European airspace data to users [airspace, flow and capacity managers, air traffic service providers and civil/military airspace users, Airports] in the strategic, pre-tactical and tactical phases of ASM and ATFCM.

The ADR will provide airspace information, containing both static and dynamic elements of airspace information that will support the ASM / ATFCM / ATC collaborative process. It will contain information about the past, present and future status of airspace, routes, sector capacities, airport capacities, runways in use, pre determined ATFCM scenarios and their modus operandi to resolve problematic traffic areas, etc. for which a recognised authority has taken a decision in terms of implementation, allocation, activation, etc.

The ADR will support clients in a variety of ways. For example:

- AOs and CFSPs will be able to consult online and download at any moment the current and planned use of airspace structures to determine optimised flight profiles.
- FMPs will be able to consult and update online data on the airspace status (planned and allocated airspace by the AMC) to help resolve expected capacity shortfalls with a better airspace allocation.

1.5 Structure Of The Document

The document consists of a main document which:

- identifies the data domains and the data maintenance phases.
- identifies the data items associated with each data domain together with an indication of which data maintenance phase each item is needed and which implementation phase it will be needed to provide ADR services.
- indicates the area of geographical coverage of the data.

The catalogue also comprises a number of annexes contained in separate documents:

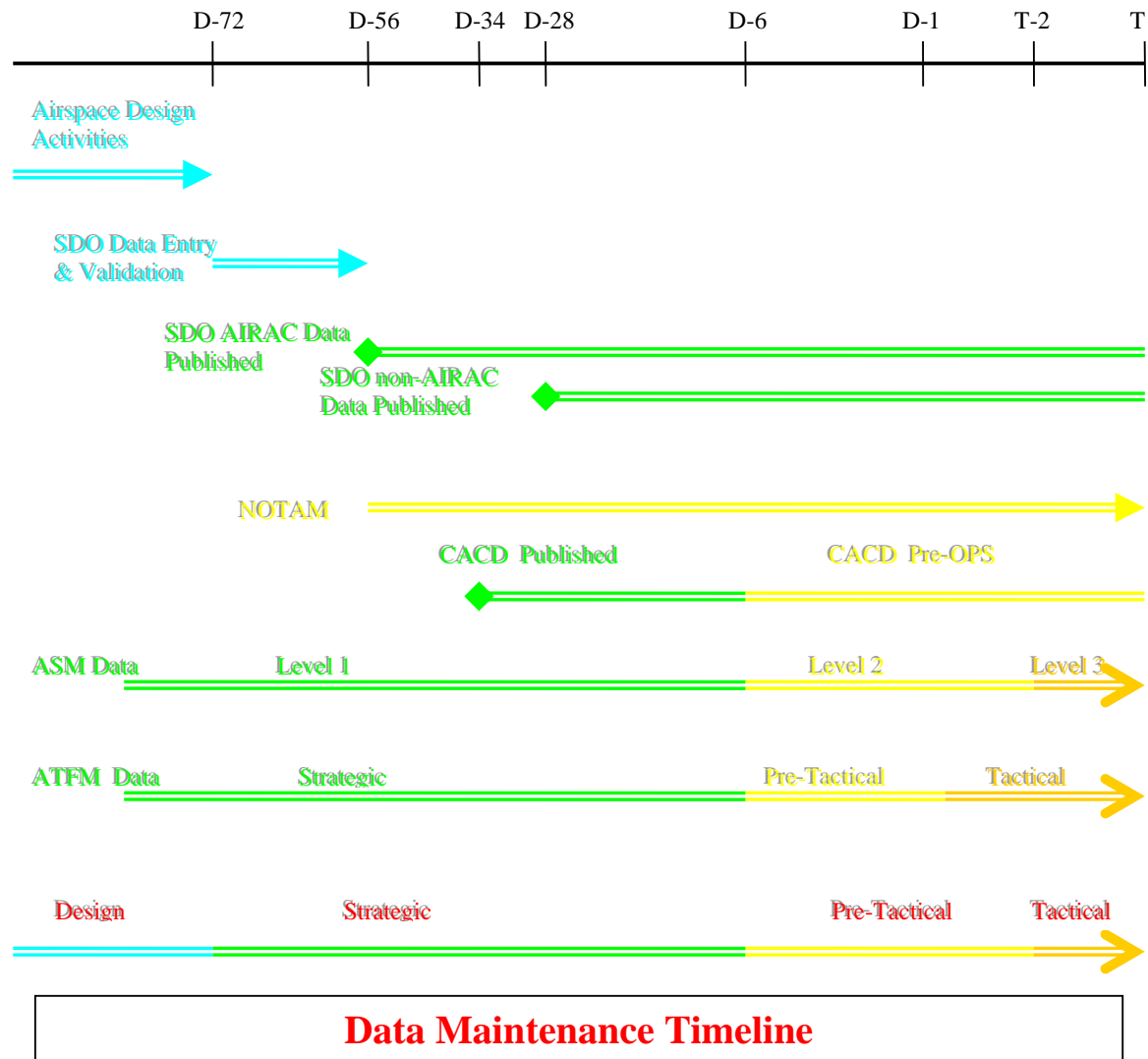
- Annex A provides a mapping of the data items to the services that the ADR supports.
- Annex B shows the data flows between the ADR system components for provision of the data.
- Annex C state the requirements for ADR data provision.
- Annex D maps the ADR required data objects and attributes to AIXM

Reading of the main document is recommended to all as it contains important information relevant throughout the catalogue. However, the distribution and approval of annexes will vary according to the appropriate audience and timing:

2. Data Maintenance Phases

The diagram below defines the airspace data maintenance time line and gives an overview of the data availability within them. The phases: **Design**, **Strategic**, **Pre-Tactical** and **Tactical**, which have been defined will be used to show the time when each data item can be changed.

D= AIRAC release date; T=midnight of the AIRAC switch date;



Airspace design activities: activities related to long and medium term airspace design and evaluation, terminal and en-route procedure design.

SDO Data Entry & Validation: activities surrounding actual entry and syntactical validation of Airspace static data changes in EAD Static Data Operations.

SDO AIRAC Data Published: period when SDO AIRAC data is available after D-56 publication deadline.

SDO non-AIRAC Data Published: period when SDO non-AIRAC data is available after D-28 publication deadline.

NOTAM: period when NOTAMs can be released for the concerned AIRAC (from D).

CACD Published: period when CACD strategic data is available.

CACD Pre-OPS: period when CACD strategic and Pre-Tactical data are available.

ASM Data: Level 1: ASM infrastructure data is available i.e. times when a military area is available for reservation are published; Level 2: reservation and allocation activities take place; Level 3: activation of areas takes place;

ATFM Data: Strategic: Strategic traffic orientation data is evaluated and made available e.g. RAD; Pre-Tactical: Regulation and supporting data is made available e.g. Sector Configuration Activation data; Tactical: Tactical regulation and supporting data is made available e.g. de-icing impact.

3. Data required for ADR

The purpose of this section is to identify the data items associated with each data domain, and for each data item define:

- in which data maintenance phase it is needed for and thus will be available (as defined in section 2),
- in which implementation phase it will be provided (Phase I or II)
- over which geographical area coverage of the data will be provided.

Similar to official publications of airspace data, the ADR required data has been grouped into data domains. Namely:

- Aerodrome,
- Aircraft Type,
- Airspace,
- ATFCM Scenario,
- Authority,
- Capacity,
- Route,
- Significant Point ,
- Terminal Procedures,
- Flight Restrictions,
- Organizational Unit.

Geographical Coverage.

The terms used to describe the areas of Geographical coverage are defined on the Eurocontrol CFMU external website. They are:

- **CFMU** Area
- CFMU **Adj**(acent) Area.
- **FUA** Area.

and also:

- **World Wide** (self explanatory).

The geographical area covered includes at least the CFMU Area for all but a few data items.

An empty white cell indicates that the data will not be created or updated in that phase.

Data Domain	Data Item	Design	Strategic	Pre-tactical	Tactical	ADR Implementation Phase	Geographical Coverage
Aerodrome	ICAO Location Indicator.					1	World Wide
	IATA Code					1	World Wide
	Aerodrome Name					1	World Wide
	Location Name					1	World Wide
	Type of Aerodrome (Land, Water, Heliport etc.)					1	CFMU
	Control Type (civil, military, joint)					1	CFMU
	ARP: Position					1	World Wide
	ARP: Elevation					1	CFMU
	Runway directions					1	CFMU
	Magnetic Variation					1	CFMU
	Runway Configurations					1	CFMU
	Runway Configuration Activation			1	2	1/2	CFMU
	Regional Runway Configurations					2	CFMU
	Regional Runway Configurations Activation					2	CFMU
	Runway Characteristics (PCN Only)		1	2	2	1/2	CFMU
	Taxi Times: Permanent					1	CFMU
	Taxi Times: Temporary					1	CFMU
	Terminal (Building)					2	CFMU
	Terminal Usage: Strategic, Pre-tactical and Tactical.					2	CFMU
	Associated Units (TWR, APP, ARO etc.)					1	World Wide
	Collocation					1	CFMU
	Flight Plan SID/STAR requirement					2	CFMU
Significant Point	All Significant Points (Includes also: GeoPoint, BoundaryPoint not mentioned below)						
	Identification					1	World Wide
	Name					1	World Wide
	Position					1	World Wide
	Navigation Aid only						
	Type					1	World Wide
	Magnetic Variation					1	CFMU + Adj.
	Operational Status					2	World Wide
	RadarPoint only						
	Referenced Aerodrome					1	World Wide

Data Domain	Data Item	Design	Strategic	Pre-tactical	Tactical	ADR Implementation Phase	Geographical Coverage
	ReferencePoint only						
	Referenced NavigationAid					1	World Wide
	TerminalPoint only						
	Referenced Runway					1	World Wide
Route	ATS, TACAN, Polar Track Structure and Conditional Routes only						
	Identifier					1	CFMU + Adj.
	Name					1	“
	Segment Definition: Vertical Limits, Availability (ATS, CDR, RNAV), FL Series, Type of Flight (GAT, OAT)					1	“
	North Atlantic Tracks only						
	Identifier					2	CFMU + Adj.
	Segment Definition (Segment, FL Series, Activation)					2	“
Terminal Procedures	All Terminal Procedures						
	Identifier					2	CFMU
	Served Aerodrome					2	CFMU
	SID, STAR and Approach Procedures only						
	Segment Definition or procedure turns					2	CFMU
	Availability					2	CFMU
	Vertical Limits					2	CFMU
	Speed limitations					2	CFMU
	Usage Limitations (Aircraft Type/Equipment)					2	CFMU
	Initial Approach Fix					2	CFMU
	Approach Procedure only						
	Served STAR					2	CFMU
Flight Restriction	All Flight Restrictions: RAD (Traffic Flow, DCT, Free Route Airspace), Flight Profile and Aerodrome Connecting Points.						
	Identifier					1	CFMU
	Applicability					1	CFMU

Data Domain	Data Item	Design	Strategic	Pre-tactical	Tactical	ADR Implementation Phase	Geographical Coverage
	Processing Indicator: (Traffic Flow, DCT, Free Route Airspace, FlightProfile, AD Connecting Points)					1	CFMU
	Type (mandatory/forbidden)					1	CFMU
	Textual Description					1	CFMU
	Operational Goal					1	CFMU
	RAD (Traffic Flow, DCT, Free Route Airspace) and Flight Profile.						
	Conditions (conditional flow, DCT limit, FRA Entry/Exit)					1	CFMU
	Routings					1	CFMU
	Aerodrome Connecting Points only						
	DCT limit (in NM)					1	CFMU
	Connecting Segments (Aerodrome to Point)					1	CFMU
	Flight type limitation					1	CFMU
Airspace	All Airspace types: (Including all below plus Area, AUA, Region not mentioned below.)						
	Location Indicator					1	World Wide or CFMU ¹
	Airspace Indicator					1	“
	Volume ²					1	“
	Is part of other Airspace					1	“
	NAS, FIR & UIR only						
	Governing Authority					1	World Wide

¹ World Wide for FIR, UIR and Nas. CFMU Area only for other Airspace types unless otherwise stated.

² Volumes can be consulted as either a set of lateral and vertical limits or **alternatively** as an aggregation of:

FAB:	CTA, UTA and TMAs.
FIR, UIR and Sector:	2D “parts” plus vertical limits.
NAS:	FIRs and UIRs
SECTOR_C,CTA, UTA, OCA, CTR, TMA:	Sectors
Restricted Airspaces except CBA:	2D “parts” plus vertical limits or other Restricted Airspaces of the same type.
CBA:	any type of Restricted Airspaces.

This means that data providers shall enable this alternative by **always** providing the Volume data using the specified aggregations. N.B in the first phase Volumes will be given only as aggregations of other Airspaces or parts.

Data Domain	Data Item	Design	Strategic	Pre-tactical	Tactical	ADR Implementation Phase	Geographical Coverage
	Control, Upper Control, Oceanic Control and Terminal Area only						
	Controlling Unit					1	CFMU+ADJ
	Activation					2	CFMU+ADJ
	Sector Clusters					1	CFMU
	Sector Clusters Composition					1	CFMU
	Sector Cluster Configuration					1	CFMU
	Sector Cluster Configuration Activation					1	CFMU
	Frequency Plan					2	CFMU
	Sector and Sector_C only						
	Sector Identifier					1	CFMU
	Owning CTA, UTA, OCA, TMA, CTR					1	CFMU
	Owning Cluster					1	CFMU
	Referenced Sector Configuration					1	CFMU
	Activation (derived from Sector Cluster Configuration)					1	CFMU
	Frequency Plan					2	CFMU
	Restricted Airspace: Prohibited, Danger, Restricted, Temporary Reserved, Temporary Segregated and Cross Border Area only						
	Responsible Authority					1	CFMU or FUA ³
	Availability ⁴					1	“
	Activation					1	“
	ASM Indicator (Boolean) ⁵					1	“
	FUA Levels					1	“
Organizational Unit.	FMP, FMU, ACC, UAC, OAC, ARO, TWR, APP, AIS, CFMU, RCC, RSC only						
	Location Indicator					1	CFMU
	Owner authority					1	CFMU
	CFSP, AOCC, AOCU, Handling agents and others.						
	Identifier					1	World Wide
– o c a –	All types (Country, ANSP, Private, INTL)						

³ Prohibited Areas for all CFMU Area are available; FUA Area covered only by remaining Restricted Airspace types.

⁴ Shows when available for reservation.

⁵ For Prohibited Area solely indicates manageability, FUA levels available for other Restricted Airspaces

Data Domain	Data Item	Design	Strategic	Pre-tactical	Tactical	ADR Implementation Phase	Geographical Coverage
	Location Indicator					1/2	CFMU
	Name					1/2	CFMU
	Country only						
	Special Dates					1	CFMU
Aircraft Type	ICAO Identifier					2	World Wide
	IATA Identifier					2	“
	Name					2	“
	ICAO Classification					2	“
	Wake Turbulence Category					2	“
	Maximum Take Off Weight					2	“
	Generic Flight Performance					2	“
Traffic Volume	Identifier					1	CFMU
	Activation					1	CFMU
	Reference location: Airspace, SignificantPoint, Aerodrome Arrival or Aerodrome Departure					1	CFMU
	Additional Flows					1	CFMU
	Controlling FMP					1	CFMU
	Capacity					1	CFMU
Regulation	Traffic Volume reference					2	CFMU
	Protected Location					2	CFMU
	Rate					2	CFMU
	Description					2	
	Other Regulation Information ⁶					2	CFMU
ATFCM Scenario	Regulation reference					2	CFMU
	Flight Restriction Reference					2	CFMU
	Sector Configuration Activation Reference					2	CFMU

⁶ To be defined.

4. References

#	Title	Version	Date	Location
1.	Consolidated ADR Operational Requirements	0.12	17_11_09	DMEAN One Sky Library
2.	ADR Project Charter	2.4	14_10_09	DMEAN One Sky Library
3.	DMEAN Concept of Operations	P1	16_09_04	DMEAN One Sky Library

5. Glossary of Abbreviations

ACC	Area Control Centre
ADR	Airspace Data Repository
AFTN	Aeronautical Fixed Telecommunication Network
AIRAC	Aeronautical Information Regulation And Control
AIS	Aeronautical Information Services
AIXM	Aeronautical Information Exchange Model
AMC	Airspace Management Cell
ANSP	Air Navigation Service Provider
AO	Aircraft Operator
AOCC	Aircraft Operator Control Centre
AOCU	Aircraft Operator Control Unit
APP	Approach
ARP	Aerodrome reference Point
ARO	ATS Reporting Office
ASM	Airspace Management
ATFCM	Air Traffic Flow and Capacity Management
ATM	Air Traffic Management
ATS	Air Traffic Services
CACD	Central Airspace & Capacity Database
CDR	Conditional Route
CFMU	Central Flow Management Unit
CFSP	Computerized Flight Plan Service Provider
CRCO	Central Route Charges Office
CTR	Control Zone
D	Danger Area
DDR	Demand Data Repository
DMEAN	Dynamic Management of European Airspace Network
eAMI	Electronic Airspace Management Information
EAD	European AIS Database
ENV	Environment
FMP	Flow Management Position
FMU	Flow Management Unit
FPL	Flight Planning
FUA	Flexible Use of Airspace
GAT	General Air Traffic
NOTAM	Notice to Airmen
OAT	Operational military Air Traffic
OAC	Oceanic Area Control Centre
OI	Operational Improvement
P	Prohibited Area
R	Restricted Area
RAD	Route Availability Document
RCA	Reduced Co-ordination Airspace
RCC	Rescue Coordination Centre
RSC	????
SAFA	Safety Assessment of Foreign Aircraft
SDO	Static Data Operations (EAD)
SITA	Société Internationale de Télécommunications Aéronautiques
TRA	Temporary Reserved Area
TSA	Temporary Segregated Area
TWY	Taxiway

TWR	Aerodrome Control Tower
UAC	Upper Area Control Centre
UUID	Universally Unique Identifier

Annex A Supported Services.

This annex is contained in a separate document.

Annex B Data Flows between ADR Components.

This annex is contained in a separate document. **To be completed.**

Annex C Requirements for ADR Data Provision.

This annex is contained in a separate document. **To be completed.**

Annex D Relationship to AIXM.

This annex is contained in a separate document.